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## The Systematic Study on the Genus *Trioza* (Homoptera, Psylloidea) from Amamiôshima Is. and Tokunoshima Is., Kagoshima Prefecture, S. Japan, with Descriptions of Three New Species

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**Abstract** Eight *Trioza* species collected from the Islands of Amamiôshima and Tokunoshima, Amami Group, in northern part of the Ryukyu Archipelago are dealt with. Among them, three new species are described under the names of *T. insulicola*, *T. silvestris*, and *T. pentaspina*. *T. amamiosimensis* KUWAYAMA is redescribed with host plant information.

**Key words:** Taxonomy; *Trioza*; Amamiôshima Is.; Tokunoshima Is.; new species.

The Amami Group is located between Kyushu and the Ryukyu Islands, Japan (Fig. 1), consisting of five main islands and several small islands. This region has a characteristic fauna comprising some endemic mammals, birds, and insects. However, very little species of the psylloid genus *Trioza* have been reported from the region, except for the following works. KUWAYAMA (1943) described *T. amamiosimensis* as the first species of the genus from the Amami Group, and MIYATAKE (1964) recorded three additional species, *T. cinnamomi*, *T. kuwayamai* and *T. nigra*.

I had opportunities to make surveys two times in the islands of Amamiôshima and Tokunoshima in 1991 and 1993, and was able to obtain a number of psylloids including some undescribed species. In this paper, I described three new species of *Trioza*, and gave a redescription of *T. amamiosimensis* with its host plant knowledge. One species is newly added to this islands fauna, and four of eight species are endemic to the Amami Group.

The holotypes and some paratypes of three new species to be described are deposited in the collection of the Laboratory of Entomology, Tokyo University of Agriculture, except for some paratypes which will be kept in the collection of the Osaka Museum of Natural History and in my private collection.

Before going further, I wish to express my gratitude to Mr. Yorio MIYATAKE of the Osaka Museum of Natural History, for his helpful suggestion on my study and critical reading of the original manuscript, and to prof. Yasuaki WATANABE, Laboratory of Entomology, Tokyo University of Agriculture,

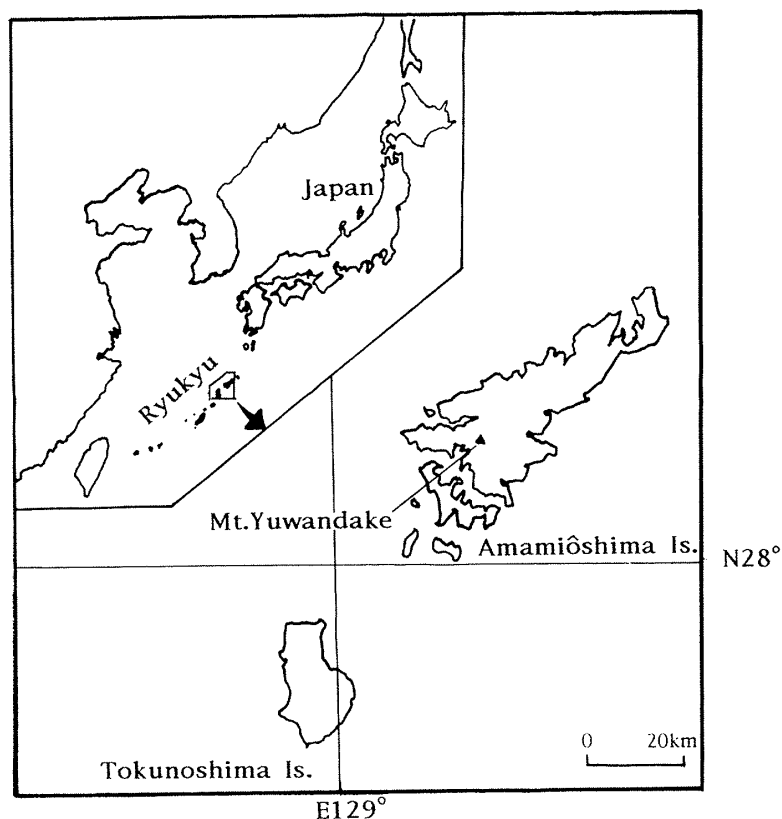


Fig. 1. Map showing the Amamiōshima Is. and Tokunoshima Is.

continuously encouraged me. Many thanks are also due to Mr. Yûichi OKUSHIMA, Mr. Masami MASUMOTO and Miss Sachiyo NIRASAWA who helped in material.

### *Trioza cinnamomi* (BOSELLI, 1930)

[Japanese name: Nikkei-togari-kijirami]

*Spanioza cinnamomi* BOSELLI, 1930, 201.

*Trioza cinnamomi*: MIYATAKE, 1969, 19, pl. 2.

*Specimens examined*. 5♂, Hagedake-rindô, Amagi-chô, Tokunoshima Is., on *Cinnamomum doederleinii*, 15. III. 1993, K. MATSUMOTO leg.; 6♂ 20♀, Fusida, Kasari-chô, Amamiōshima Is., on *C. japonicum*, 18. III. 1993, S. NIRASAWA leg.

*Distribution*. Japan (Honshu, Shikoku, Kyushu, Amamiōshima Is., Tokunoshima Is., Okinawa-hontô Is., Iriomote-jima Is.).

*Host plant*. "Yabunikkei"-*Cinnamomum japonicum* SIEB., "Shibanikkei"-*Cinnamomum doederleinii* ENGLER [Lauraceae].

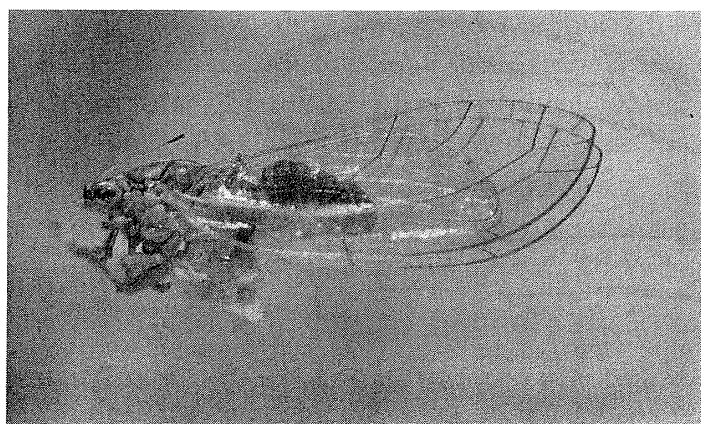


Fig. 2. *Trioza insulicola* sp. nov., ♂, in lateral aspect.

***Trioza ternstroemiae* MATSUMOTO, 1993**

[Japanese name: Mokokku-togari-kijirami]

*Trioza ternstroemiae* MATSUMOTO, 1993, 183–186.

*Specimens examined.* 2♂ 2♀, Yuwandake, Amamiôshima Is., 4. XI. 1966, Y. MIYATAKE leg. (preserved in the collection of Osaka Museum of Natural History).

*Distribution.* Japan (Honshu, Amamiôshima Is., Okinawa-hontô Is., Iriomote-jima Is.).

*Host plant.* “Mokokku”-*Ternstroemia gymnanthera* (WIGHT et ARN.) BEDD. [Theaceae].

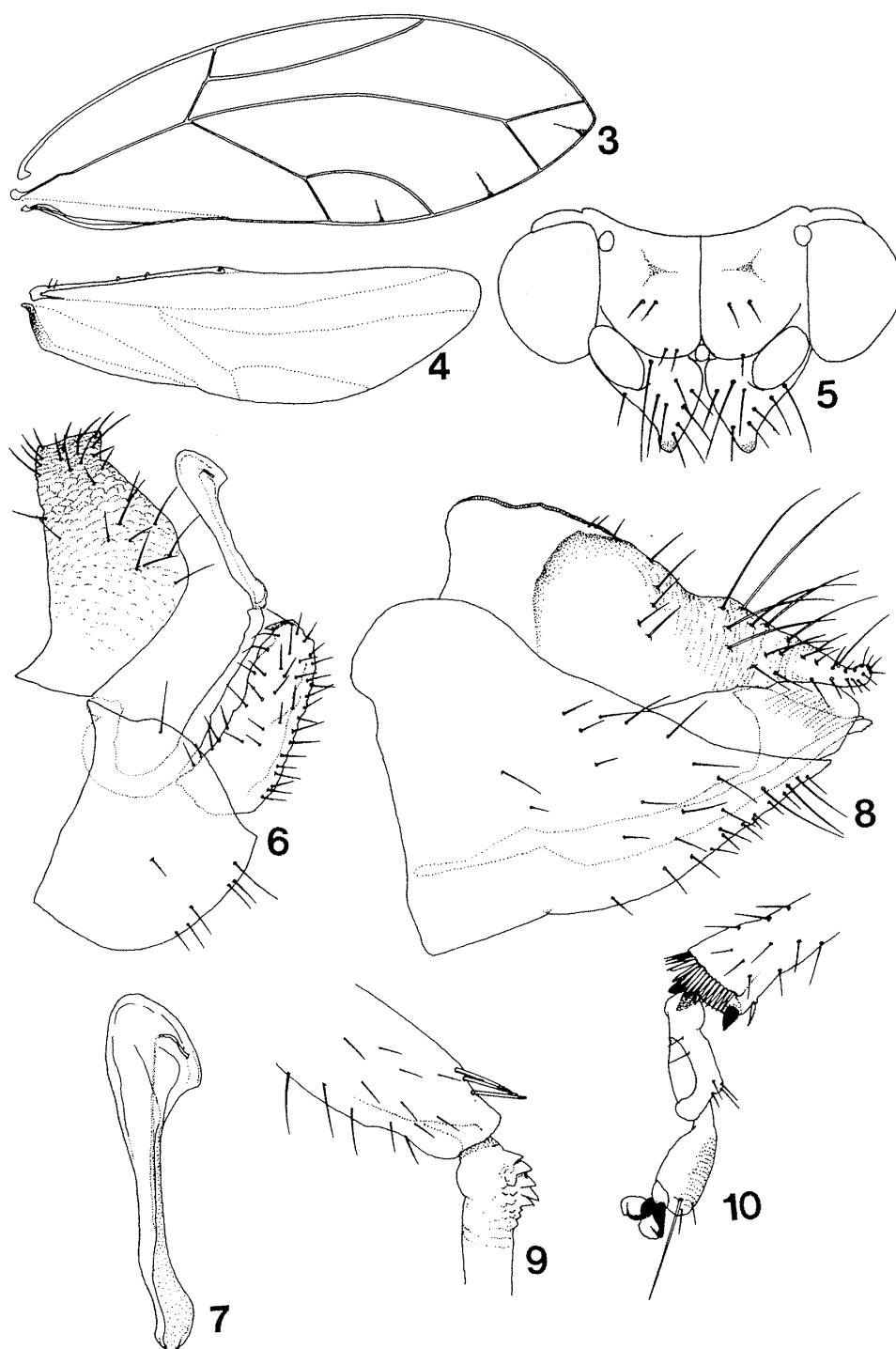
***Trioza insulicola* sp. nov.**

[Japanese name: Sudajii-togari-kijirami]

(Figs. 2–10)

*Coloration.* General color yellow to yellowish brown; antenna yellowish brown, with two apical segments black; ocelli orange; eyes reddish brown; vertex yellowish orange, with brown U-form maculation on each side of median line; genal cones yellowish orange, brown apically. Thorax yellowish, with four brown longitudinal stripes on each side of dorsum; metathorax yellow; forewing transparent or slightly flavous, veins pale yellow, apical half of Rs, M, Cu pale brown; hind wing transparent; leg yellowish orange, claws and apical spurs of hind tibia black. Abdomen yellow, tergum brown.

*Structure.* Head (Fig. 5) small, slightly wider than thorax; vertex almost flat, with an excavated median suture and with a small depression on each side of posterior half; genal cones shorter than vertex, conical and dilated apically,



Figs. 3-10. *T. insulicola* sp. nov. — 3, Forewing; 4, hind wing; 5, head, frontal view; 6, male genitalia; 7, aedeagus; 8, female genitalia; 9, apex of hind femur and base of tibia; 10, apex of hind tibia and tarsi.

with long pubescence. Antenna short and slender, about 1.6 times as long as width of head, each segment with 1 or 2 small setae at the apex, apical segment with 1 long and 1 short setae; relative length of each segment as 2.5 : 2.5 : 10.0 : 5.8 : 3.3 : 5.0 : 5.8 : 4.1 : 3.3 : 2.1.

Thorax of typical triozone form, arched dorsad in lateral aspect; pronotum much narrower than head, narrowly produced in anterior margin; praescutum wider than pronotum but narrower than mesoscutum. Forewing (Fig. 3) long and slender, 2.9 times as long as wide, narrowed basally, widest at about 3/5 from base, angulated at the apex; R + M + Cu, C and A with small setae in each basal half; Rs short, slightly arched; M long and slightly arched;  $M_{1+2}$  1.4 times as long as  $M_{3+4}$ , ending near the tip of wing;  $Cu_{1a}$  arched;  $Cu_{1b}$  straight and two times as long as  $Cu_1$ ; cubital cell subparallelogrammic, longer than medial cell. Hind wing (Fig. 4) long and slender, about 3/5 as long as forewing, 3.1 times as long as wide, narrowly rounded at the apex, with dense microscopic granules on the surface; venation triozone, but R and Cu obsolete basally; costal margin with 2–4 straight setae on the base, with 2 hooked frenula on mid area, and a strong hooked retinaculum at the apex. Legs long and massive, with long hairs scarcely; hind coxa well developed, meracanthus long and sharp at the apex; hind femur with 3 strong setae at the apex (Fig. 9); hind tibia with 4–5 acute and short basal spurs (Fig. 9), with 1 outer and 2 inner apical spurs, and with 1 fine spur at the apex (Fig. 10). Abdomen (excl. genitalia) shorter than thorax, pubescent ventrally.

Male genitalia (Fig. 6) small, 1/3 as long as the rest of abdomen; proctiger longer than forceps, tapered towards the apex, with short pubescence; anterior margin nearly straight though curved cephalad in basal 1/5, caudal margin strongly arched and pubescent; forceps nearly parallel-sided in lateral aspect, each with short pubescence in apical 3/4 and rounded at the apex, with a small tooth on inner side; aedeagus (Fig. 7) long and slender, club-shaped, with apical portion produced caudad and rounded at the apex; subgenital plate higher than long in lateral aspect, caudal margin rounded, with scarce pubescence.

Female genitalia (Fig. 8) long, half as long as the rest of abdomen; dorsal valve slightly longer than ventral valve, stout at the base, slender and slightly curved dorsad at the apex, dorsal margin bent on middle portion in profile, with 5–7 long setae on the apical portion and short pubescence at the apex; ventral valve stout at the base and tapered towards the acute apex, ventral margin slightly bent ventrally as figured, with fine pubescence on the surface.

Length of body: ♂, 1.3–1.5 mm, ♀, 2.0–2.2 mm (to tips of folded wings ♂, 2.7–2.9 mm; ♀, 3.6–3.7 mm); length of forewing ♂, 2.1–2.3 mm, ♀, 2.8–2.9 mm; width of head ♂ ♀, 0.50–0.55 mm.

Holotype: ♂, Nangawa-rindô, Setouchi-son, Amamiôshima Is., on *Castanopsis sieboldii*, 4. III. 1993, K. MATSUMOTO leg.

Paratypes: 7♂ 7♀, same data as for the holotype; 1♀, Shinokawa, Setouchi-son, Amamiôshima Is., 7. III. 1991, K. MATSUMOTO leg.; 1♀, Furea-ino-mori, Amamiôshima Is., 23. III. 1990, Y. OKUSHIMA leg.; 1♀, Fureaino-mori, Amamiôshima Is., 26. III. 1990, Y. OKUSHIMA leg.; 1♀, Chûô-rindô, Amamiôshima Is., 26. III. 1991, on *C. sieboldii*, Y. OKUSHIMA leg.; 1♀, Naze, Amamiôshima Is., on *C. sieboldii*, 29. III. 1990, Y. OKUSHIMA leg.; 1♂, Mt. Amagidake, Amagi-chô, Tokunoshima Is., on *C. sieboldii*, 16. III. 1993, K. MATSUMOTO leg.; 2♀, Hagedake-rindô, Tokunoshima Is., at light trap, 15. III. 1993, K. MATSUMOTO leg.

*Host plant*. "Sudajii"—*Castanopsis sieboldii* (MAKINO) [Fagaceae].

*Distribution*. Japan (Amamiôshima Is., Tokunoshima Is.).

Differs from the other species of the genus, in being small sized body, and in having the characteristic coloration, the slender forewing with short Rs and the smaller median cell, and the club-shaped aedeagus. It is similar to *T. quadrimaculata* YANG, 1984 from Taiwan in the head maculation, the forewing venation and the host relation to *Castanopsis* spp., but it differs from the latter in the following characteristics: the male proctiger strongly produced caudad, the aedeagus produced caudad at the apex, the female dorsal valve slightly upcurved at the apex and the dorsal margin bent on middle portion in lateral aspect.

*Ecological note*. This species is feeding on the evergreen host plant, and teneral adults and last instar nymphs were collected. The nymphs were found only from underside of old leaves of the host plant, and a small pit gall was observed on the leaves.

*Remarks*. This new species is related to the Taiwanese species, *T. quadrimaculata* YANG, 1984, in the external features and the host relationship. Further, this species group has relation with the Japanese species, *T. remota*, *T. quercicola* and the following new species, in the several characters and the host relationship.

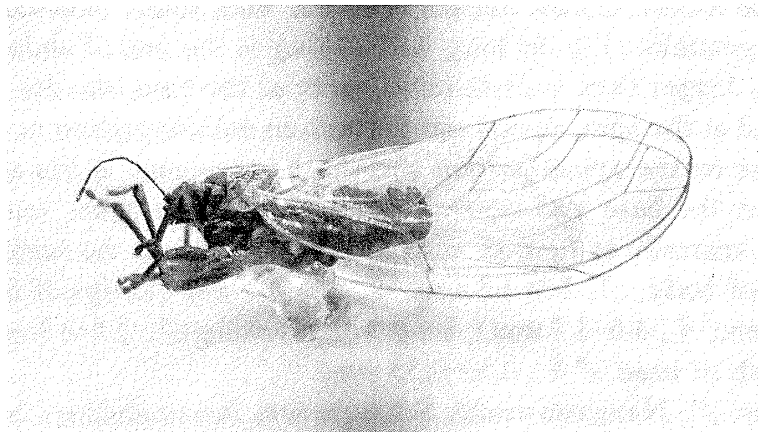
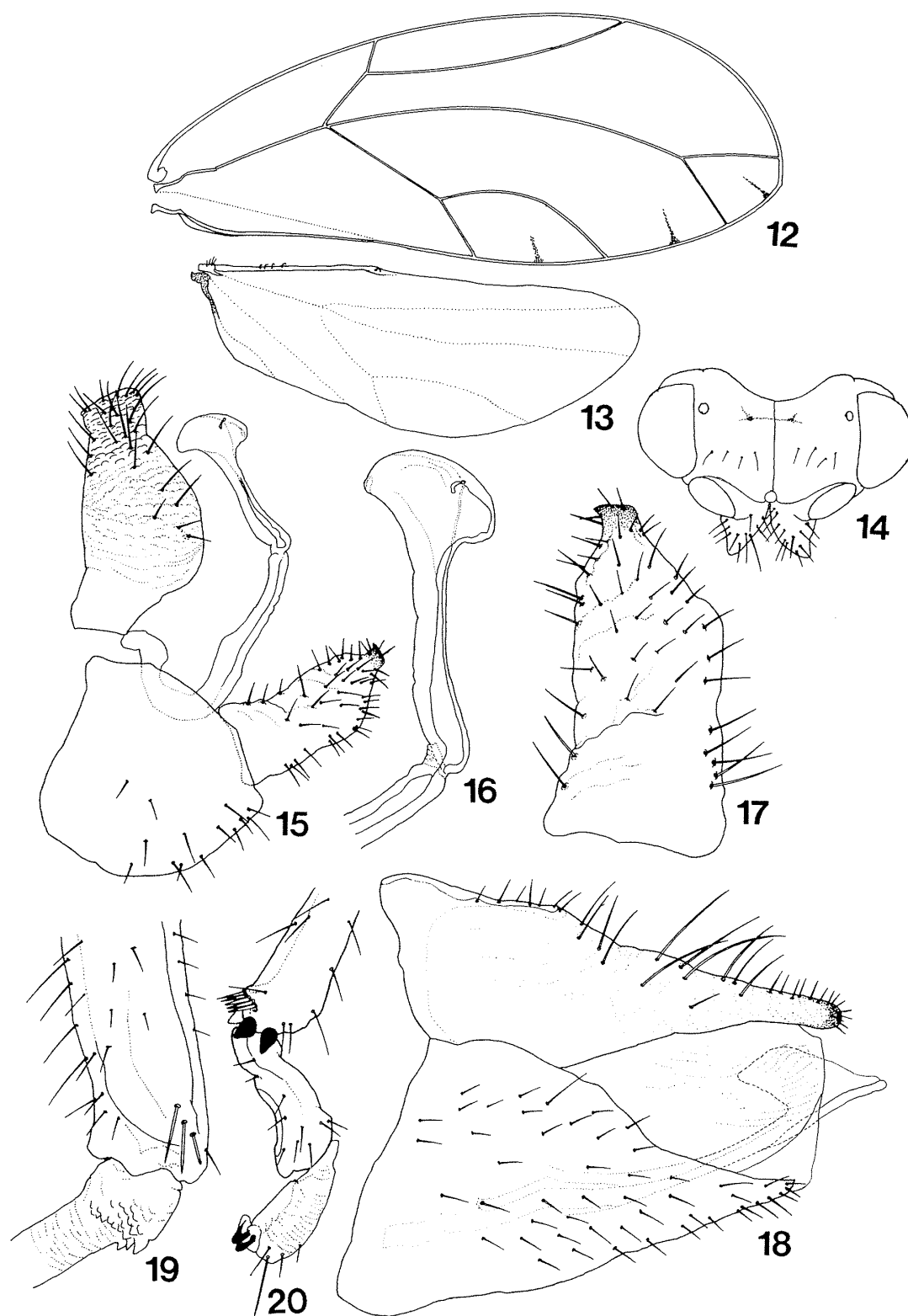


Fig. 11. *T. silvestris* sp. nov., ♂, in lateral aspect.



Figs. 12-18. *T. silvestris* sp. nov. — 12, Forewing; 13, hind wing; 14, head, frontal view; 15, male genitalia; 16, aedeagus; 17, outer side of forceps; 18, female genitalia; 19, apex of hind femur and base of tibia; 20, apex of hind tibia and tarsi.

*Trioza silvestris* sp. nov.

[Japanese name: Amami-kashi-togari-kijirami]

(Figs. 11–20)

**Coloration.** General color yellowish brown to reddish brown; antenna black; vertex with a brown longitudinal maculation on each side, with median line reddish brown; genal cones yellowish white, but brown apically. Thorax yellowish brown, with four longitudinal maculations of reddish brown to blackish on dorsum. Forewing transparent, veins yellowish brown, R+M+Cu, Cu<sub>2</sub>, and basal half of C pale yellow; hind wing clear; legs pale yellow, apical 1/3 of tibia and tarsus brown respectively. Abdomen yellowish brown to black, sternum and female dorsal valve greenish yellow, caudal margin of each segment and tip of female genitalia black, forceps and proctiger of male genitalia black, though reddish brown at tip of the latter.

**Structure.** Head (Fig. 14) small, narrower than thorax nearly vertical; vertex wide, 1.6 times as wide as length of median line, with a deep impression on each side of posterior area of median line, with posterior margin slightly incised at the middle; genal cones conical, as long as vertex, slightly thickened basally, dilated apicad and with long pubescence; clypeus strongly produced forward; eyes nearly hemispherical, strongly prominent laterally; ocelli rounded and slightly elevated; antenna slender, 1.7 times as long as width of head, apical segment with 1 long and 1 short setae at the apex, 2nd segment with 6–8 short hairs at the apex, 3rd, 6th, 7th and 8th segments with 1 or 2 short hairs near the apex respectively, relative length of each segment as 1.8 : 2.3 : 10.0 : 3.7 : 2.8 : 3.9 : 3.5 : 3.9 : 2.6 : 2.8.

Thorax of typical triozone-form, well arched, dorsal surface without hairs; pronotum much narrower than head, anterior margin narrowly produced, praescutum strongly convex; mesoscutum slightly impressed along the median line. Forewing (Fig. 12) long and wide, more or less elliptical, nearly 2.6 times as long as wide, slightly angulated at the apex; Rs short, about half as long as forewing, slightly arched; M<sub>1+2</sub> nearly straight, 1.4 times as long as M<sub>3+4</sub>, ending near the tip; medial cell wider than high; cubital cell fan-shaped, wider than high; Cu<sub>1a</sub> well arched, nearly parallel with M on the basal half. Hind wing (Fig. 13) short, about half as long as forewing, narrowly rounded at the apex; each vein with fine setae biserially; costal margin with 4–5 straight setae at the base, 4 hooked frenula on median area, and 1 retinaculum at the apex. Legs long and massive, with long or short pubescence; hind coxa well developed; meracanthus conical and acute at the apex; hind femur with 3 strong setae near the apex (Fig. 19); hind tibia with 3 sharp basal spurs (Fig. 19), and with 1 outer and 2 inner apical spurs (Fig. 20); apical segment of tarsus with a long

hair. Abdomen (excl. genitalia) shorter than thorax, with dense pubescence on the ventral surface.

Male genitalia (Fig. 15) small,  $1/4$  as long as the rest of abdomen; proctiger long and stout in lateral aspect, with short pubescence in apical half, tapered toward the truncated apex, caudal margin strongly arched, anterior margin nearly straight and slightly bent; forceps (Fig. 17) long and stout,  $2/3$  as long as proctiger, caudal and anterior margins nearly parallel on basal  $3/4$ , apical portion narrowly produced dorsad and pointed at the apex, with short pubescence on outer surface and strong setae on inner surface; aedeagus (Fig. 16) long and slender, 2nd segment slightly shorter than forceps, strongly produced dorsad as club-shape in apical  $1/3$  and narrowly rounded at the apex; subgenital plate as long as high, with thin and short pubescence on the rounded ventral margin.

Female genitalia (Fig. 18) small,  $1/3$  as long as the rest of abdomen; dorsal valve long, slender in apical half and narrowly rounded at the apex, with dorsal margin slightly bent dorsad in lateral aspect, with long setae on dorsal margin and short setae apically; ventral valve long and subtriangular in lateral aspect, as long as or slightly shorter than dorsal valve, stout in basal half, acute at the apex, with short pubescence.

Length of body ♂, 1.7–1.8 mm, ♀, 2.2–2.4 mm (to tips of folded wings ♂, 3.2–3.4 mm, ♀, 3.6–3.9 mm); length of forewing ♂, 2.6–2.7 mm, ♀, 3.0–3.3 mm; width of head ♂ ♀, 0.6–0.8 mm.

Holotype: ♂ Hagedake-rindô, Amagi-chô, Tokunoshima Is, 16. III. 1993, K. MATSUMOTO leg.

Paratypes: 37♂ 161♀, same data as for the holotype; 1♂ 2♀, Mt. Amagidake, Amagi-chô, Tokunoshima Is., 15. III. 1993, S. NIRASAWA leg.

*Distribution.* Japan (Tokunoshima Is.).

*Host plant.* "Okinawa-urajirogashi"–*Quercus miyagii* KOIDZ. [Fagaceae].

Similar to the preceding species, *T. insulicola* sp. nov., but differs from it in having the larger body, the wider forewing, the larger cubital cell, and the stouter male forceps. Differs from other *Trioza* species in having the short and arched Rs of forewing, the strongly produced male proctiger, and the club-shaped aedeagus.

*Ecological notes.* The overwintered adults were collected in the primary forest, together with 1st or 2nd instar nymphs from underside of young leaves of the host plant, and small pit galls were observed on the leaves.

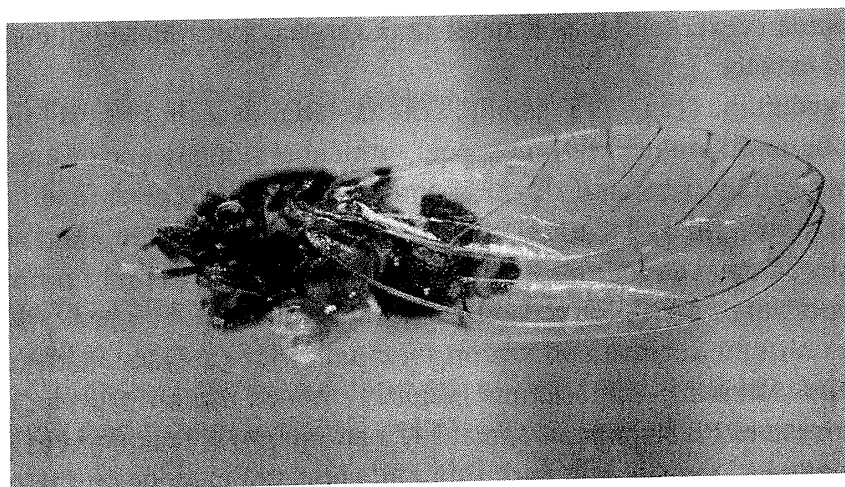


Fig. 21. *T. pentaspina* sp. nov., ♂, in lateral aspect.

***Trioza kuwayamai* ENDERLEIN, 1914**

[Japanese name: Akatetsu-togari-kijirami]

*Trioza kuwayamai* ENDERLEIN, 1914, 235; MIYATAKE, 1965, 182.

*Specimens examined.* 2 nymphs, Ryugô-chô, Amamiôshima Is., on *Pouteria obovata*, 17. III. 1993, K. MATSUMOTO leg.

*Distribution.* Japan (Amamiôshima Is., Okinawa-hontô Is., Ishigaki-jima Is., Iriomote-jima Is.); Taiwan.

*Host plant.* "Akatetu"—*Pouteria obovata* BAEHNI [Sapotaceae].

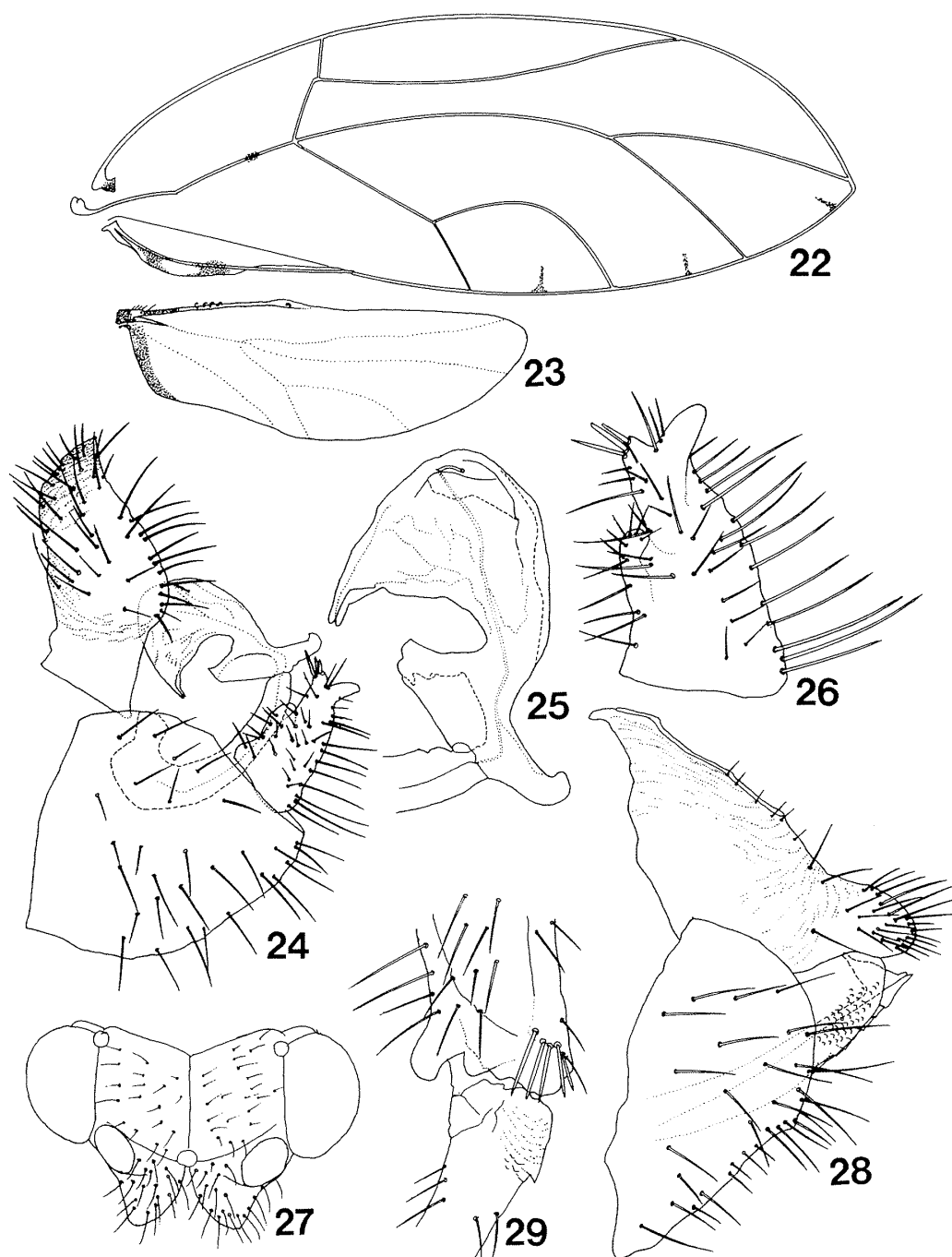
***Trioza pentaspina* sp. nov.**

[Japanese name: Kebuka-togari-kijirami]

(Figs. 21–29)

*Coloration.* General color dark brown to black, though pale yellow in teneral forms; vertex dark to yellowish brown; genal cones pale yellow; antenna pale yellow, with two apical segments black; thorax dark brown, with lateral side pale yellow to reddish brown; legs dark brown, tibia and hind tarsi yellowish white; forewing transparent, with a black spot near the middle portion of claval fold; hind wing transparent, with a black maculation at the base of anal area; abdomen dark brown; male forceps and subgenital plate yellowish white at each base.

*Structure.* Head (Fig. 27) small, narrower than thorax, nearly vertical; vertex wide, about 2 times as wide as long, slightly produced in frontal margin, with long pubescence all over, strongly cleft on median line, each side of the cleft with deep impression; genal cones short, 0.9 times as long as vertex,



Figs. 22–29. *T. pentaspina* sp. nov. — 22, Forewing; 23, hind wing; 24, male genitalia; 25, aedeagus; 26, outer side of forceps; 27, head, frontal view; 28, female genitalia; 29, apex of hind femur and base of tibia.

strongly divergent, with long pubescence, apex slightly curved laterad and rounded; eyes strongly produced laterally, hemispherical; ocelli small, slightly elevated; clypeus strongly produced forward, with long pubescence. Antenna

long and slender, 1.5–1.6 times as long as width of head, 3rd, 4th, 7th and 8th segments with 1 or 2 short setae at the apex each, 5th to 9th segments with a rhinaria at the tip each; apical segment with 1 long and 1 short setae apically, relative length of each segment as 1.5 : 1.5 : 10.0 : 3.7 : 3.5 : 3.7 : 3.5 : 2.7 : 2.0 : 1.4.

Thorax well arched, thickly with long pubescence; pronotum narrow, strongly arched forward; praescutum slightly arched in lateral aspect. Forewing (Fig. 22) long and wide, 2.7 times as long as wide, narrowed basally and angulated at the apex; Rs short, about half as long as forewing, slightly arched; M arched, medial cell long and triangular, about 1/3 as long as forewing,  $M_{1+2}$  slightly arched, ending near the apex;  $Cu_{1a}$  strongly arched,  $Cu_{1b}$  nearly straight, half as long as Cu, cubital cell large, nearly parallelogrammic; hind wing (Fig. 23) long and wide, about half as long as forewing, 2.1 times as long as wide, venation triozone, costal margin with 5–6 straight setae at the base, 4 hooked frenula on median portion and 1 strong retinaculum at the apex, cubital cell large, about 2 times as long as high. Legs long and robust, thickly with long pubescence; hind femur with 5 strong setae near the apex (Fig. 29) and 3 campaniform sensilla on inner side of median portion; hind tibia with a strong basal tooth (Fig. 29) and 1 + 1 + 2 apical spurs, each segment tibia with 3 or 4 long hairs; meracanthus long and pointed at the apex. Abdomen long and stout, thinly with long pubescence ventrally.

Male genitalia (Fig. 24) small, 1/5 as long as the rest of abdomen; proctiger long, anterior margin nearly straight in basal 2/3, posterior margin produced caudad medially, obliquely truncate at the apex, sparsely pubescent in apical 2/3; forceps (Fig. 26) short in lateral aspect, 2/3 as long as proctiger, stout at the base, and tapered toward the apex, sparsely pubescent, posterior margin with long pubescence, median portion of anterior margin with a large process, apical portion divided into two lobes, anterior one with 3 long bristles, posterior one narrower and longer than anterior one and narrowly rounded at the apex; aedeagus (Fig. 25) with 2nd segment strongly modified, basal portion produced each cephalad and caudad, much broad, bent and tapered apically as figured; subgenital plate large, with long pubescence, ventral and caudal margins rounded.

Female genitalia (Fig. 28) short, 1/4 as long as the rest of abdomen; dorsal valve short, stout in basal 2/3, narrow in apical 1/3, dorsal margin with short setae, apical portion thickly with long and short setae; ventral valve shorter than dorsal valve and shorter than high in lateral view, dorsal margin strongly produced dorsad, ventral margin slightly sinuate, subangulate at the apex, with long setae throughout; dorsal valvula densely with microscopic ground sculpture in ventral half.

Length of body: ♂, 1.8–1.9 mm, ♀, 2.2–2.3 (to tips of folded wings ♂,

3.8–3.9 mm, ♀, 3.8–3.9 mm); length of forewing ♂, 3.0–3.2 mm, ♀, 3.1–3.3 mm; width of head ♂ ♀, 0.6–0.7 mm.

Holotype: ♂, Yuwan, Uken-son, Amamiôshima Is., 20. III. 1991, M. MASUMOTO leg.

Paratypes: 7♂ 10♀, same data as for the holotype.

*Distribution.* Japan (Amamiôshima Is.).

*Host plant.* Unknown (“Sagaribana”—*Barringtonia racemosa* (L.)?).

Similar to the Taiwanese species, *T. obunca* FANG et YANG, 1986, in general appearance, but can be distinguished from it by the following characteristics: the genal cones yellowish white and strongly divergent; the caudal margin of male proctiger produced caudad; the male forceps with a long process at the apex; the female dorsal valve narrow on apical 1/3. Differs from Indian species, *T. fusca* MATHUR, 1975, in having the genal cones which are rounded apically, apical process of male forceps which is rounded at the apex, and female dorsal valve of expanded caudad. Differs from other species feeding on the *Syzygium* trees in the characteristic male and female genitalia. Differs from *T. kuwayamai* (ENDERLEIN, 1914) in having following characteristics; forewing long, cubital cell of forewing much wider, male forceps with long process at the apex and aedeagus stout.

*Notes.* Teneral adults were collected on leaves of the above mentioned plant at the seaside. It is probable that this plant is the host plant of this species, though it needs further survey.

### *Trioza nigra* KUWAYAMA, 1910

[Japanese name: Kuro-togari-kijirami]

*Trioza nigra* KUWAYAMA, 1910, 57; KWON, 1983, 99; YANG, 1984, 265.

*Specimens examined.* 4♀, Nangawa-rindô, Setouchi-son, Amamiôshima Is., on *Styrax japonica*, 4. III. 1993, K. MATSUMOTO leg.; 2♀, Mt. Yuwandake, Amamiôshima Is., 5. III. 1993, S. NIRASAWA leg.; 2♂ 2♀, ditto, 9. III. 1993, K. MATSUMOTO leg.; 1♂, Mt. Yuidake, Amamiôshima Is., 11. III. 1993, S. NIRASAWA leg.; 1♂ 2♀, Hagedake-rindô, Amagi-chô, Tokunoshima Is., on *S. japonica*, 16. III. 1993, K. MATSUMOTO leg.; 1♂ 2♀, Mt. Amagidake, Amagi-chô, Tokunoshima Is., 15. III. 1993, S. NIRASAWA leg.

*Distribution.* Japan (Honshu, Shikoku, Kyushu, Amamiôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-hontô Is., Ishigaki-jima Is., Iriomote-jima Is.); Korea, Taiwan.

*Host plant.* “Egonoki”—*Styrax japonica* SIEB. et ZUCC. [Styracaceae].

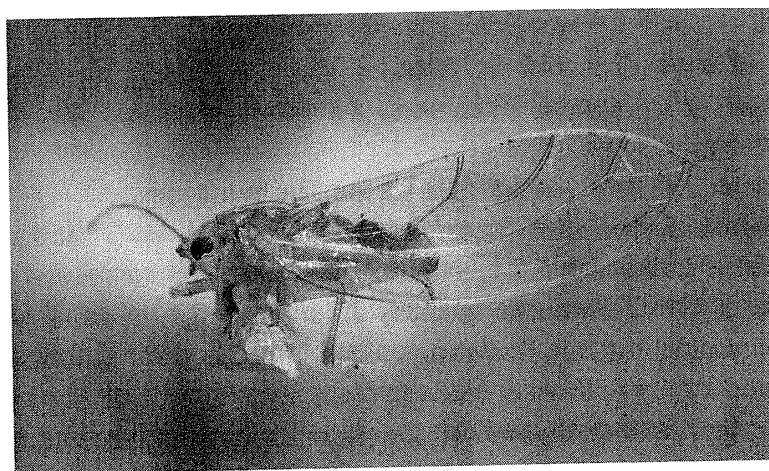


Fig. 30. *T. amamiosimensis* KUWAYAMA, ♂, in lateral aspect.

***Trioza amamiosimensis* KUWAYAMA, Jr., 1943**

[Japanese name: Amami-togari-kijirami]

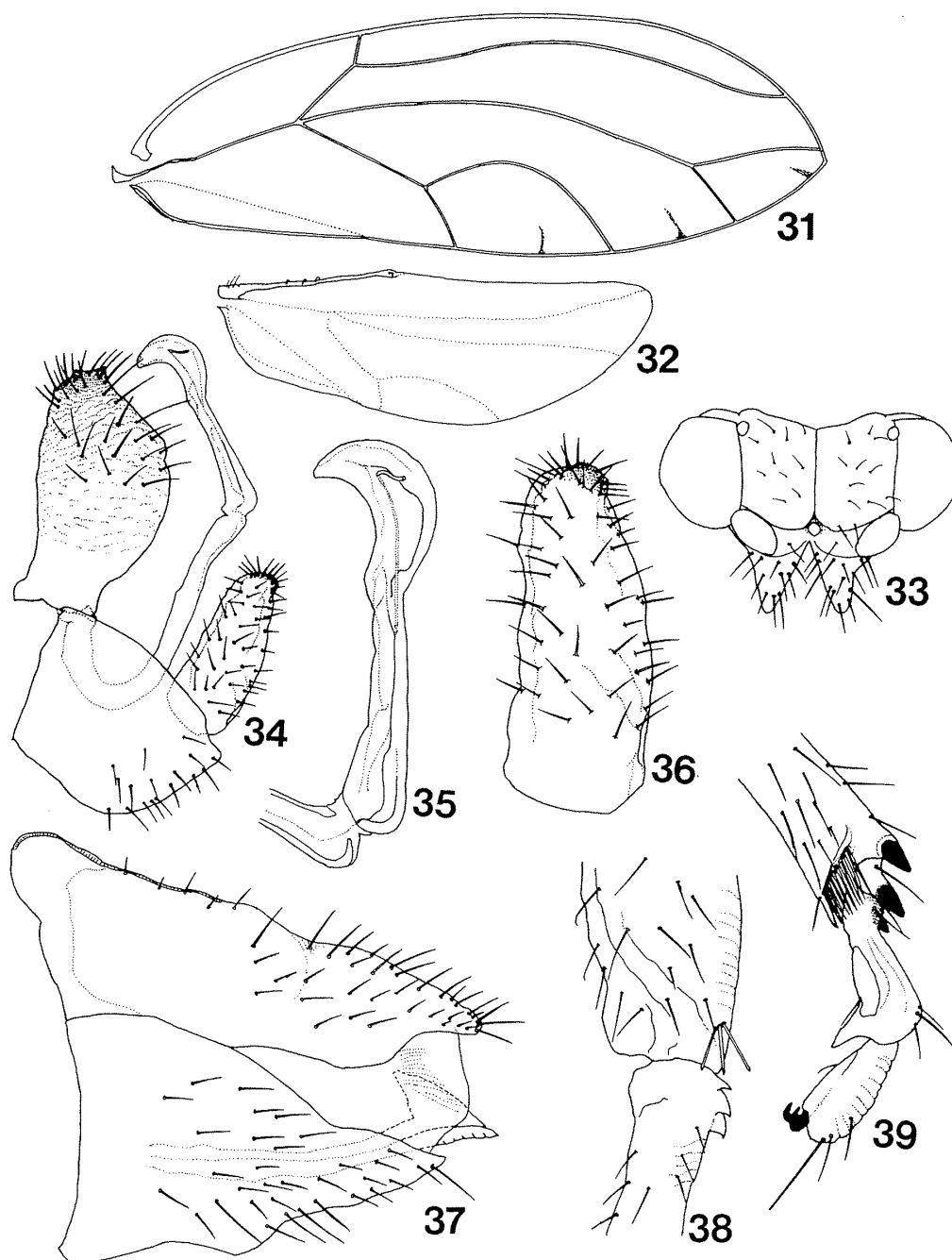
(Figs. 30–39)

*Trioza amamiosimensis* KUWAYAMA, Jr., 1943, 506; SASAKI, 1954, 37; MIYATAKE, 1965, 182; HODKINSON, 1983, 363.

**Coloration.** General color orange to pale red, teneral form pale yellow; head orange, antenna and tip of genal cone brown; thorax without maculation; hind wing transparent, anal area with brown spot on the base; legs yellowish orange, tarsi yellowish brown; abdomen pale red, terga brown; male proctiger and tip of forceps yellowish brown.

**Structure.** Head (Fig. 33) small, narrower than thorax, with short pubescence; vertex 1.5 times as long as wide, with shallow cleft on median line, frontal margin slightly produced, with a shallow impression on each side of median line, with long pubescence throughout; genal cones long and slender, as long as vertex, prominently divergent as figured, strongly stout basally and abruptly slender in apical 1/3, pointed at the apex, with long pubescence; eyes hemispherical, strongly produced laterally, slightly narrowed in under margin; ocelli small, slightly convex; clypeus small and slender, slightly produced forward, with thin pubescence. Antenna long and slender, about 1.9 times as long as width of head, 10th segment with 1 long and 1 short apical setae, 4th to 8th segments with 1 or 2 setae each, and 3rd segment with 7 to 8 setae, 8th and 9th segments with a rhinaria each near the apex, relative length of each segment as 1.8 : 1.8 : 10.0 : 5.3 : 4.1 : 3.5 : 4.1 : 4.4 : 2.9 : 1.9.

Thorax well arched and elevated dorsad, with long pubescence; pronotum narrow, strongly bent cephalad in dorsal aspect, lateral side produced laterad;



Figs. 31–39. *T. amamiosimensis* KUWAYAMA. — 31, Forewing; 32, hind wing; 33, head, frontal view; 34, male genitalia; 35, aedeagus; 36, outer side of forceps; 37, female genitalia; 38, apex of hind femur and base of tibia; 39, apex of hind tibia and tarsi.

praescutum wedge-form in dorsal aspect, strongly produced dorsad and sharply pointed at the frontal margin in lateral aspect, with long pubescence; mesoscutum slightly flattened in dorsal side and widely produced cephalad in lateral side in lateral aspect, imarginate on frontal margin in dorsal aspect, with long

pubescence. Forewing (Fig. 31) long and slender, 2.6 times as long as wide, narrowed basally, angulated at the apex; veins without conspicuous setae; Rs long and sinuate, ended close to the apex of  $M_{1+2}$ ; M long and slightly arched;  $M_{1+2}$  1.8 times as long as  $M_{3+4}$ , ended close to the apex; medial cell small and flattened,  $1/6$  as long as forewing; Cu short, about 1.5 times as long as  $Cu_{1b}$ , nearly straight;  $Cu_{1a}$  well arched, apical  $1/3$  nearly parallel with  $Cu_{1b}$ ; cubital cell large and subrhomboid. Hind wing (Fig. 32) long and large, about  $3/5$  as long as forewing, 3.0 times as long as wide, narrowly rounded apically; venation rather triozone, cubital cell flattened, costal margin with 3 straight setae at the base, 2–4 hooked frenula on middle portion and 1 strong retinaculum at the apex. Legs long and slender, with long pubescence; hind femur with 5 strong setae near the apex (Fig. 38); hind tibia with 3 pointed basal teeth (Fig. 38), 1 + 2 apical spurs, and with comb-like setae on inner side of the apex (Fig. 39); each tarsus with a long setae at the apex; hind coxa well developed; meracanthus short and slender, subacuminate at the apex. Abdomen (excl. genitalia) long and slender,  $2/3$  as long as thorax, with short pubescence on all over.

Male genitalia (Fig. 34) small,  $1/3$  as long as the rest of abdomen; proctiger long, narrowed basally and apically, anterior margin nearly straight in lateral aspect, caudal margin produced caudad, with long setae in apical half; forceps (Fig. 36) shorter than proctiger, slender and slightly tapered toward the apex in lateral aspect, with a small process at the apex, with long pubescence on outer surface; subgenital plate longer than high, caudal margin rounded in lateral aspect, with short pubescence posteriorly; aedeagus (Fig. 35) long and slender, 2nd segment hook-shaped in apical  $1/3$ , subacuminate at the apex.

Female genitalia (Fig. 37) long, about half as long as the rest of abdomen; dorsal valve longer than ventral valve, narrowed toward apex, dorsal margin slightly sinuate at the middle, narrowly rounded at the apex, with long setae on median portion and short pubescence on dorsal margin; ventral valve stout, strongly produced in basal  $2/3$ , dorsal margin sinuate, ventral margin medially produced ventrad in lateral aspect, with pubescence.

Length of body ♂, 1.5–1.6 mm, ♀, 1.8–1.9 mm (to tips of folded wings ♂, 3.1–3.3 mm, ♀, 3.3–3.5 mm); length of forewing ♂, 2.6–2.7 mm, ♀, 2.7–2.8 mm; width of head ♂, 0.7–0.8 mm, ♀, 0.8–0.9 mm.

*Specimens examined.* 2♂ 7♀, Nangawa-rindô, Amamiôshima Is., on *Symplocos microcalyx*, 11. IV. 1991, K. MATSUMOTO leg.; 3♂ 4♀, ditto, 4. III. 1993, K. MATSUMOTO leg.; 1♂ 9♀, Mt. Yuwandake, Amamiôshima Is., on *S. microcalyx*, 9. IV. 1991, K. MATSUMOTO leg.; 6♂ 6♀, ditto, 12. IV. 1991, K. MATSUMOTO leg.

*Distribution.* Japan (Amamiôshima Is.).

*Host plants.* “Amashiba”—*Symplocos microcalyx* HAYATA [Symplocaceae]. (New record).

The present species is different from *T. esakii* and *T. kasugaensis* from Japan (MIYATAKE, 1975) in having the small sized body, the unique coloration, and the long female genitalia. Differs from other Japanese species of *Trioza* in having the forewing with long Rs and the hooked-like aedeagus.

*Ecological notes.* This species lays eggs on the young branch of the host plant in the early spring. The nymphs are sucking on bud, and discharge wax like white strings.

*Remarks.* This species is related to the Japanese species, *T. esakii*, *T. kasugaensis*, and *T. magna* on the host relationship. It is probable that they make a species group with the two Taiwanese species, *Homotrioza kuwayamai* and *H. epica*, which are feeding on *Symplocos* spp. (YANG, 1984). However, discussion about their taxonomic position is left for careful future study.

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